INTEGRAL CROSS-SECTION MEASUREMENTS FOR $^{7}Li(n,n't)^{4}He$, $^{27}Al(n,p)^{27}Mg$, $^{27}Al(n,\alpha)^{24}Na$, $^{58}Ni(n,p)^{58}Co$ AND $^{60}Ni(n,p)^{60}Co$ RELATIVE TO ^{238}U NEUTRON FISSION IN THE THICK-TARGET $^{9}Be(d,n)^{10}B$ SPECTRUM AT E_d = 7 MeV*

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ABSTRACT

Integral activation cross sections for the reactions $^{7}Li(n,n't)^{4}He$, $^{27}Al(n,p)^{27}Mg$, $^{27}Al(n,\alpha)^{24}Na$, $^{58}Ni(n,p)^{58}Co$ and $^{60}Ni(n,p)^{60}Co$ have been measured relative to the ^{238}U neutron-fission cross section in the neutron field produced by 7-MeV deuteron bombardment of a thick beryllium target. The measured results are compared with calculated values derived using ENDF/B-V differential cross sections and published spectral information. In all instances, these experimental results appear to be very consistent with the predictions of ENDF/B-V. Details of the experimental and analytical procedures are documented, and the potential of this integral method in neutron nuclear data development applications is discussed.

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